

## Appendix C

**Heavy/Light Mixes**

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**HEAVY/LIGHT OPERATIONS**

Effective integration of heavy and light forces maximizes the capabilities of each. The term “heavy/light mix” is used generically in this discussion to include any integration of heavy and light forces. Specific mixes are addressed at the end of this appendix.

Forces are categorized as heavy on the basis of their ground mobility. They include mechanized infantry, armored, and cavalry forces. Heavy forces are best employed where battles are fought over wide areas of relatively unrestricted terrain. Engagements are fast moving and cover large areas of the battlefield.

Light forces provide strategic flexibility through their capability for rapid deployment. Light forces have

limited mobility and firepower. They rely on concealment and sudden, violent action. In close terrain, they can deny the enemy unhindered movement. Light forces are most effective when given an offensively oriented mission. Sustained operations or operations in a high intensity environment will require augmentation of light forces.

Planners must understand the differences in support concepts and organizations between heavy and light forces to build the proper support package. Relationships, responsibilities, and procedures must be coordinated and clearly defined as the heavy/light force is being developed.

**SUPPORT DIFFERENCES**

Due to differences in force structure, equipment, and tactical doctrine, the support structures and doctrine for heavy forces differ from those for light forces.

**COMMAND AND CONTROL**

Except for the infantry division (National Guard), the C2 structure of the light DISCOM is fundamentally different from that of the heavy DISCOM. The heavy DISCOM has an MSB in the DSA and an FSB in each BSA. The MSB gives the customer in the division rear (other than aviation brigade elements who also receive support from the aircraft maintenance company) one support battalion to provide all DS-level logistics and HSS. Likewise, in the brigade area, customers have a single point of contact for DS-level support through the FSB. This structure provides a battalion commander and staff to coordinate rear operations in the BSA. The infantry division (National Guard) DISCOM is organized along the lines of a heavy DISCOM.

The other light DISCOMs are functionally organized with S&T, maintenance, and medical battalions. Forward companies from each battalion locate in each BSA with a forward area support coordinating office

from the DISCOM HHC. Together these companies and the coordinating office make up the forward area support team. The FASCO coordinates the efforts of the FAST. However, command and control of the companies is retained by the parent battalions. A redesign of the LID DISCOM is evolving. LID employment doctrine has evolved to include split division operations and cross attachments with other forces. To enhance command and control, especially when a brigade-size task force is separated from its parent division or when operations continue for prolonged periods, the field commanders sought a transition to a design with multifunctional support battalions and centralized materiel management. The redesign calls for the LID to have a DISCOM structure like the heavy DISCOM with an MSB, three FSBs, and a DMMC.

The heavy DISCOM is more adaptable to heavy/light mixes because of the FSB. C2 is more defined when there is one support battalion associated with each maneuver brigade. If a brigade of a heavy division is task-organized to a light division, the associated FSB will accompany the brigade. This FSB will carry with it reinforcing assets from the MSB and perhaps the

COSCOM. Likewise, if a heavy battalion is task-organized to a light brigade, the bulk of the support assets to accompany it will come from a single battalion. The battalion is that FSB associated with the battalion's parent brigade. However, the light divisions do not have forward support battalions. Support to any light force being task-organized to a heavy force will require elements of all three functional battalions. If the task organization is a light brigade with a heavy division, the associated FASCO/FAST will accompany the brigade along with additional assets. However, the FASCO office is not a battalion staff. The FASCO is not staffed with enough personnel to provide continuous C2 of the FAST for an extended period.

Regardless of the command and control relationship, information must flow from the deployed unit to the controlling headquarters. This information includes —

- Critical fuel and ammunition requirements.
- Status of each class of supply.
- Maintenance requirements and backlog.
- Class IX requirements and availability.
- Movement requirements and available transportation assets.
- Availability of medical treatment and evacuation assets.
- Locations of support elements.
- Status of support personnel.
- Anticipated support problems.

### ARM

Under MOADS, the system for distributing ammunition is the same for the heavy and light divisions. The DAO in the DISCOM HHC/MMC is responsible for managing ammunition throughout the division. There is an ATF in each BSA operated by the DISCOM. There is also an ATP in the DSA operated by the nondivisional DS company. The goal for both types of divisions is 100 percent throughput of ammunition to the BSA ATP for units operating in the brigade area. The types of weapon systems differ significantly among divisions. However, the process of managing and replacing them remains essentially the same.

In heavy divisions, the forward ATP is organic to the FSB. In light divisions, the forward supply companies of the S&T battalion operate the ATPs. A major consideration, however, is in the weapon systems used in each division. These different weapon systems

drastically affect ammunition consumption factors. Planners at the unit level and in the DISCOM must be aware of the major differences in the ammunition consumption of the different divisions. FM 101-10-1/2 details the consumption factors for each type of force. Another concern centers on ground transportation available for emergency distribution of ammunition. In the light division, ground transportation assets are much more austere than in the heavy division.

Until MOADS is fully implemented, there are other differences among divisions in ammunition resupply. First, all DISCOMs except the LID DISCOM operate an ATP in the DSA. LID elements in the division rear typically have to pick up ammunition at the nearest ASP. In addition, even before MOADS is implemented, the LID relies on loads configured for LID units by the nondivisional DS company.

### FUEL

In all divisions, bulk fuel is pushed to division Class III points. The quantity delivered is based on fuel forecasts and status reports. Each division operates Class III points in the DSA and each BSA, and the Class III section of the MMC manages Class III supply. In addition, aviation fuel in each division comes directly from EAD to the division aviation brigade.

The major fueling differences among divisions center on the different types and quantities of equipment. FM 101-10-1/2 shows the differences in consumption. As a result, differences exist among divisions in assets available for the storage and distribution of bulk fuels. All divisions rely to some extent on throughput of fuel to the BSA Class III points. However, there are no assets in the LID to provide additional resupply of forward Class III points from the DSA. Also planners supporting any elements of the air assault division must take into account large aviation fuel requirements.

Supply point distribution is the primary distribution method used in most situations. However, variations do exist in distribution techniques. In heavy divisions, the FSBs use their 5,000-gallon tankers to provide forward refueling. This is discussed in FM 63-20. The LID FASTs, however, must deliver fuel to light infantry battalion trains. The reason is that the battalions do not have sufficient organic capability to go back to the Class III point and pick up fuel.

In all divisions, packaged petroleum products are handled by the Class II, III (packaged), IV, and VII

points. Customers submit requests for products as required to their supporting supply point.

### **FIX**

All DISCOMs are responsible for performing DS maintenance, reinforcing unit maintenance, and Class IX supply operations for their supported units. Management of Class IX and DS maintenance operations is performed by the MMC. Beyond these similarities, however, the organizations and concepts for fixing the force vary widely among divisions.

In the LID, minimal DS maintenance is performed in the brigade sector. The bulk of the DS maintenance capability in the LID DISCOM is in the DSA. Even there, however, assets are austere. In the heavy and National Guard DISCOMs there are three maintenance companies (heavy, light, and missile) in the MSB. The airborne and air assault divisions have heavy and light companies in the DSA. The LID however, has only a main support company in the DSA. To compensate for the austerity of its DS maintenance capability, the LID relies on increased passback to EAD maintenance elements. The LID also relies on the use of replacement over repair.

Although all divisions require DS maintenance reinforcement from nondivisional units, the LID's reliance is greater. Two teams have been designated to accommodate the increased passback load associated with the LID. The LID maintenance support team and missile maintenance team are modules assigned to the nondivisional maintenance company. These teams must deploy soon after the division does in order to provide required sustainment. They may be attached to the LID maintenance battalion.

The LID also relies on replacement or exchange over repair. The exchange concept includes both reparable exchange and use of operational readiness float. Selected critical items maybe included as ORF items. These items are exchanged for customers' unserviceable items. ORF is used in those cases where the DISCOM cannot repair the items expeditiously. In developing an ORF, planners must consider the austere transportation assets of the LID. Items which may be appropriate include such items as small arms, radios, and small generators. In addition, the missile maintenance concept for the LID depends on exchange of LRUs and passback to nondivisional elements for repair.

Like ground and missile maintenance, aircraft maintenance in the LID differs from other divisions. The LID design includes the acceptable risk associated with an austere AVIM capability in the division and increased passback to EAD elements. An AVIM team has been designed to handle the additional passback in the LID. The other DISCOM with unique AVIM capabilities is the air assault DISCOM. Due to the number of helicopters in the air assault division, the DISCOM has an aircraft maintenance battalion with two AMCOs.

Fixing the heavy/light force is a significant challenge. Differences in the types and densities of equipment result in problems in Class IX and in repair capabilities. Heavy/light mixes with LID elements are particularly difficult to support. The entire maintenance concept is unique, as discussed above. As a result, assets are extremely limited. In many cases, the relevant LID maintenance unit has only one or two repairers in a particular MOS. So repair capability cannot be split in thirds to provide support when a light infantry battalion is detached from its parent brigade or a light infantry brigade is attached or assigned to another division.

### **MOVE**

The characteristic which distinguishes heavy forces from light forces is ground mobility. Dismounted infantry in all light divisions have extremely limited ground mobility. The air assault division is designed with significant air mobility. The infantry division (National Guard) has some organic ground mobility in the form of its armored and mechanized infantry battalions. However, all infantry forces were designed to be employed in situations that do not require substantial ground mobility. If the light element of a heavy/light mix is required to have significant ground mobility to keep pace with the heavy element, additional transportation assets will be provided. However, tactical planners must ensure that light elements are not being employed in situations that do not take advantage of their specific capabilities. No DISCOM transportation organization is designed to provide assets for tactical moves and at the same time perform its CSS mission.

Movement is inherent in all CSS functions. It is integral to the arm, fuel, fix, and sustain the soldier functions. In that sense, several CSS movement considerations for heavy/light mixes have already been addressed. Examples include differences in bulk fuel and emergency ammunition distribution.

Some aspects of CSS movements are the same in all DISCOMs. Every DISCOM has an MCO in its headquarters. The MCO is responsible for movement management support. He does this through control of and employment of the DISCOMs motor transport assets for CSS. Specific responsibilities and functions of the MCO previously addressed in this manual apply to all divisions. Similarly, the primary transportation unit for all DISCOMs is the transportation motor transport company. (This is in addition to the assets organic to the functional companies to perform their primary mission.) In the heavy and infantry divisions, the TMT company is organic to the MSB. In the other light divisions, the TMT company falls under the S&T battalion. Trucks are used to move general supplies from the DSA to the BSA. They also transport reserve supplies and help in displacing division units that are less than 100 percent mobile. However, the assets to perform the mission vary widely among divisions. The support concept for the LID is based on prepackaged loads being throughput to forward areas. Heavy forces having to support light elements require COSCOM support in packaging loads and moving them directly to forward areas. Light forces in general also rely more on aerial delivery. In addition, the LID maintenance concept of reliance on replacement forward depends on extensive backhaul of unserviceable components and end items.

Another important difference between heavy and light TMT companies is that heavy DISCOMs have HETs. HETs are used to move and evacuate tanks and other pieces of heavy equipment on the battlefield. Planners must ensure that HETs accompany any heavy force task-organized to a light unit.

Like fixing moving the heavy/light force represents a considerable challenge. The two types of forces have very different mobility requirements and transportation assets. When a light force is task-organized to a heavy one, transportation for tactical and CSS movements must be provided by EAD assets. When a heavy force is task-organized to a light unit, it must bring with it its share of transportation assets, including HETs. The light force, if it must support a heavy element, will need significant augmentation to handle the large requirements for such items as bulk fuel and ammunition.

## SUPPORT TO SPECIFIC MIXES

When a specific heavy/light mix is developed, the directing headquarters designates the command

## SUSTAIN THE SOLDIER

Sustaining the soldier involves providing HSS, food, water, clothing, and field service support. The systems for sustaining the soldier are similar among divisions.

HSS systems are adaptable to heavy/light mixes because of the modular support concept. The organization of the individual modules will always be the same. However, the types and quantities of modules vary among the divisions. The battalions under which the medical companies fall also vary among divisions. Medical management is performed by the division medical operations center in the heavy division and by the medical battalion staff in the light division. The modular system allows for easy reinforcement and cross-attachment of medical elements. Some of the differences in the divisions include the absence of tracked ambulances in the light divisions, the presence of air medical evacuation assets in the air assault division, and the lack of a surgical capability in the LID.

Subsistence support is also similar. Class I is pushed to the division on the basis of personnel strength reports. The LID, unlike the other divisions, depends on throughput of subsistence from EAD to the Class I points in the BSAs. Its TMT company is not structured to transport subsistence from the DSA to the BSA.

Water assets in all DISCOMs are centralized. In the heavy division water is the responsibility of the S&S company in the MSB. In the LID water responsibility rests with the headquarters and supply company of the S&T battalion. The concept for water supply is the same for all divisions. However, in the LID, the DISCOM delivers water to the trains of the light infantry battalion. If a LID element is task-organized to a heavy force, assets to make such deliveries must be included. Light infantry battalions do not have organic assets to go to a water point to pick up water.

Light DISCOMs, with limited transportation assets, stock limited clothing and other Class II items. In particular, the LID's stockage is limited to only essential items. Selected items, such as NBC overgarments, may be provided as preconfigured unit loads. Heavy forces supporting LID elements must be aware of this dependence.

relationship. The differences in support concepts and organizations discussed above must be carefully considered.

What follows here is a general discussion on several types of mixes the DISCOM may have to support. Command relationship recommendations are included. However, these are only recommendations. The commander must select the most appropriate relationship after considering at least the following factors:

- The size and mission of the force.
- The distance of the deploying force from the support base of its parent unit.
- The support capability of the receiving force. This capability is particularly important to consider in the case of light forces since the different types have significantly different support capabilities.
- The relationship between the deploying support element and the receiving unit.
- The source of support for each force.
- The self-sustaining capability of the deploying force.

In the case of light force elements being task-organized to heavy forces, planners in the heavy force must understand that light fighters are exactly that—light. The more they have to carry, the slower they move and the smaller the advantage of their relative mobility in restricted terrain. Heavy force support planners must recognize that providing too much support forward involves considerable risk. Light forces do not have the assets to move large quantities of supplies and equipment. The inability to move significant amounts of reserve stocks to support LID forces is a concern for CSS planners. Planners must establish a system that will rapidly supply packages of critical supplies to light units. These packages (which include Class IV items such as wire and survivability items) should be carefully planned in advance. The heavy DISCOM support operations branch must be involved in the support to light forces. It must coordinate for support from the COSCOM to configure unit loads for light forces. The DISCOM must also be ready to transport them forward quickly. Coordination also must be made to meet the light force's reliance on aerial resupply.

#### **HEAVY BRIGADE TO A LIGHT DIVISION**

The preferred option for such a mix is a heavy separate brigade OPCON to the light division. In such cases, the light division commander has tactical control of the brigade without the burden of administrative and logistics support. The separate brigade support

battalion is designed to tie directly into the corps support base. The BMMC passes requisitions to the COSCOM MMC. Supplies are transported from COSCOM elements to support battalion supply points. Reinforcing maintenance, transportation, and HSS are also provided by the COSCOM. When OPCON to a light division the separate brigade support battalion must also establish coordination with the light DISCOM support operations section. This is done so that the DISCOM commander knows the support status of all units in the force.

The difference between a divisional heavy brigade and a heavy separate brigade OPCON to a light division is that the divisional brigade support channel is through the parent DISCOM. The separate brigade links directly to the corps. The OPCON of a divisional heavy brigade to a light division is a viable option under the following conditions:

- The mission is relatively short (48 hours or less).
- The parent heavy DISCOM can continue to support the mission performed by the remaining heavy division elements.
- The LOCs from the heavy brigade to the parent DSA are secure and not too extended. Over-extended LOCs would prevent the DISCOM from meeting movement requirements.

The heavy brigade must come with its full complement of support assets from the heavy DISCOM. These assets typically include –

- The FSB associated with the heavy brigade.
- HETs with drivers from the MSB TMT company.
- Bulk fuel tankers with drivers from the MSB S&S company.

The support package may also include a water team from the MSB S&S company if the light division cannot support the brigade. There will also be a maintenance support team with essential ASL items from the MSB maintenance companies. This is only done if the heavy division MSB cannot provide responsive support to the operation from its DSA location. The MSB resources accompanying the brigade collocate with the FSB.

Coordination would still have to be established with the light DISCOM to keep it informed. In addition, planners should arrange to have support provided directly from the COSCOM to the supporting FSB whenever possible. For instance, subsistent and bulk fuel should be throughput from the corps to the heavy BSA as much as possible.

Attaching a heavy brigade to a light division is the least preferred option for this type of mix. This relationship requires the light division to support the heavy brigade. The major differences in support doctrine and organizations outlined above make the light DISCOM incapable of providing support without significant augmentation. The FSB with some MSB assets would still accompany the brigade as discussed above with the OPCON brigade. The MSB must provide to the maintenance company or companies in the light DSA repairers, tools, parts, TMs, and any other assets required to reinforce the FSB maintenance company in repair of following items:

- TOW/Dragon.
- Tracked vehicles.
- Wheeled vehicles.
- Turrets.
- Power generation equipment.
- Utility equipment.
- Quartermaster and chemical equipment.
- C-E equipment.

The light DISCOM also requires additional bulk fuel storage and distribution assets, Class IV supply resources, ambulances to evacuate casualties from the BSA to the DSA, and other transportation assets. Even with these resources, throughput (especially of Class I and III) from corps to the BSA should still be used whenever possible.

#### **HEAVY BATTALION TO A LIGHT BRIGADE**

The preferred option for mixes at this level is also OPCON. When OPCON, the heavy battalion task force continues to receive support from the heavy DISCOM. The key factor influencing this situation is the distance from the battalion task force to the supporting FSB. The supporting FSB can assist by operating a forward refueling point and ATP between the task force and the heavy brigade BSA. If distances are great, sustainment of the task force over an extended period becomes a major challenge. This is particularly true for maintenance, Class III, and Class V.

Support assets to accompany the battalion task force would likely include –

- The MST configured to support the task force from the supporting FSB. The team must include all required tools, communications equipment, mobility assets, and a slice of ASL items.

- Tankers with drivers from the FSB or MSB.
- HETs with operators from the MSB.
- Forklift and operator from the FSB supply company.
- Tracked ambulances with drivers to station at the battalion aid station.

Attaching a heavy task force to a light brigade is the least preferred option at this level. A light division forward area support team (or FSB in the case of the infantry division) is not capable of supporting a heavy battalion, even if accompanied by the package identified above. The FAST maintenance company normally lacks the assets necessary to reinforce the repair capability of a deployed MST. This is especially the case with the LID, which depends totally on exchange and passback in its maintenance operations. It also does not have the ability to assist in the recovery of task force assets. The light division does not have HETs to evacuate heavy equipment or move it around the battlefield. Equipment incompatibilities will complicate Class V and VII resupply. Also, the FAST supply company does not have the capability to handle the large amounts of fuel required by the heavy task force. To cross-level assets from the MSB/FSB of the parent heavy DISCOM would jeopardize the ability of the DISCOM to continue its support mission to the heavy division.

#### **LIGHT BRIGADE TO A HEAVY DIVISION**

Light forces must be employed in sufficient strength to create a reaction or tactical pause by the enemy. This typically requires light forces to be employed in division size. However, to capitalize on its advantages in close terrain, a light brigade maybe employed with a heavy division.

As with the heavy brigade to the light division, the preferred option would be a separate infantry brigade OPCON to the heavy division. As with the OPCON heavy separate brigade, the separate infantry brigade support battalion links directly to the COSCOM and coordinates with the heavy DISCOM support operations branch.

If a divisional light brigade is task-organized to a heavy division the preferred relationship is attachment. The reason for this is that the light DISCOM does not have the robustness, particularly in movement, to support a brigade over extended LOCs. The light DISCOM would be unable to continue to support the remaining light division elements. This is especially true for the LID.

The attached light brigade would be accompanied by assets from the light DISCOM. These assets would likely include the following

- FASCO from the light DISCOM HHC.
- Forward supply company from the S&T battalion.
- DAO representative from the DISCOM HHC.
- Forward maintenance company from the maintenance battalion.
- Forward support medical company from the medical battalion.
- Assets (repairers, tools, parts) from the DSA maintenance company or companies of the maintenance battalion (or MSB in the infantry division) of the light DISCOM. These provide required reinforcing support in several repair areas such as wheeled vehicles and power generation equipment. (However, the lack of robustness in the light DISCOM makes it impossible to provide a repair slice for every type of equipment.)
- Ambulances from the DSA medical company of the light DISCOM.
- Water team (if the heavy DISCOM cannot provide water support).
- Trucks from the TMT company.

(Note: Instead of the FAST elements listed above, the FSB would accompany a brigade from the infantry division.)

Even with these assets, the heavy division cannot sustain the light brigade without additional support from nondivisional elements. These would include additional trucks to provide required mobility and maintenance assets to handle increased passback. In particular, the heavy DISCOM does not have the required Class IX to support equipment that is unique to or in much higher densities in light forces. The 105 mm-towed howitzers and the 60-mm and 81-mm mortars are examples of such equipment.

The DAO in the heavy division arranges for a different mix of Class V to be throughput to the ATP in the light brigade BSA. He coordinates with the DAO representative from the light DISCOM to manage Class V supply.

Assets from the maintenance companies located in the DSA and the TMT company would normally be attached to the appropriate company of the heavy

division MSB. The FAST elements in the light BSA would likely be OPCON to the FASCO. This would be done because of distance between the companies and their parent battalion headquarters. However, there is a risk associated with this arrangement. Unlike an FSB which has a full battalion staff to supervise activities of the forward companies in the BSA, the FASCO staff is extremely austere.

This office was designed to coordinate the support activities of the FAST. It is not staffed to provide command and control, especially during continuous operations over extended periods. If the FASCO is to command and control the FAST, it will be necessary to augment the FASCO staff. Planners putting together the heavy/light task organization should look at augmenting the FASCO staff from the light DISCOM HHC or the staffs of the functional battalions.

#### **LIGHT BATTALION TO A HEAVY BRIGADE**

The preferred relationship for such a mix is again attachment. The supporting FSB faces the challenges discussed above. Even with reinforcement from its MSB, the support capabilities of the FSB are severely taxed in supporting a light infantry battalion. The supporting FSB (with reinforcement from the MSB) will be severely stressed if it has to provide the required mobility, repair capability (including Class IX) for light force equipment, Class V for light force weapon systems, and water distribution to the battalion if it is a light infantry battalion. Mobility is critical. To enable a light battalion to move rapidly over long distances as may be required in heavy/light operations, the battalion requires additional assets.

Resources accompanying a light battalion task-organized to a heavy brigade should include the following.

- A battalion share of the FAST maintenance company assets.
- Ambulances from the FAST medical company to position at the light battalion aid station.
- Trucks with drivers from the light DISCOM TMT company.

Additional maintenance and transportation assets should be provided to the MSB by the COSCOM to sustain the battalion.

OPCON of the battalion to the heavy brigade is the least preferred option. The reason is the lack of transportation assets to support movement over long distances.

Regardless of the command relationship, support planners must recognize that much unit support in a LID has been moved from the battalion to brigade level. This is done to keep the infantry battalion light and focused on its primary combat mission. The heavy brigade

(and supporting DISCOM elements) cannot expect the light battalion to plan and coordinate support to the same extent as a heavy battalion. The brigade, and as much as possible the FSB, must be prepared to help the battalion plan and provide unit-level support.